

Section 4. Lateral Separation

8-4-1. APPLICATION

Separate aircraft by assigning different flight paths whose widths or protected airspace do not overlap.

Within that portion of the Gulf of Mexico Low Offshore airspace controlled by Houston ARTCC, use 12 NM between aircraft whose flight paths are defined by published Grid System waypoints.

NOTE-

1. The Grid System is defined as those waypoints contained within the Gulf of Mexico Low Offshore airspace and published on the IFR Vertical Flight Reference Chart.

2. Lateral separation minima is contained in:
 Section 7, North Atlantic ICAO Region.
 Section 8, Caribbean ICAO Region.
 Section 9, Pacific ICAO Region.
 Section 10, North American ICAO Region - Arctic CTA.

8-4-2. SEPARATION METHODS

Lateral separation exists for:

a. Nonintersecting flight paths:

1. When the required distance is maintained between the flight paths; or (See FIG 8-4-1.)

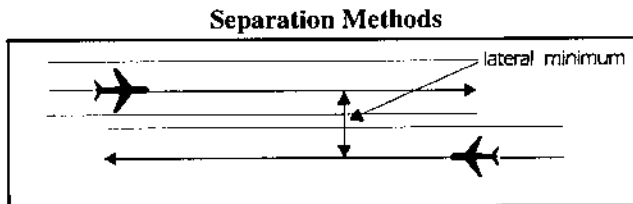


FIG 8-4-1

2. When reduced route protected airspace is applicable, and the protected airspace of the flight paths do not overlap; or (See FIG 8-4-2.)

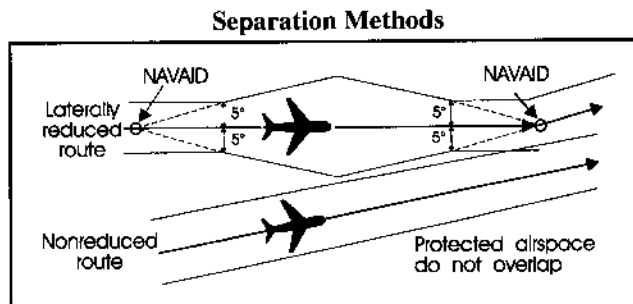


FIG 8-4-2

3. When aircraft are crossing an oceanic boundary and are entering an airspace with a larger lateral minimum than the airspace being exited; and

(a) The smaller separation exists at the boundary; and

(b) Flight paths diverge by 15° or more until the larger minimum is established. (See FIG 8-4-3.)

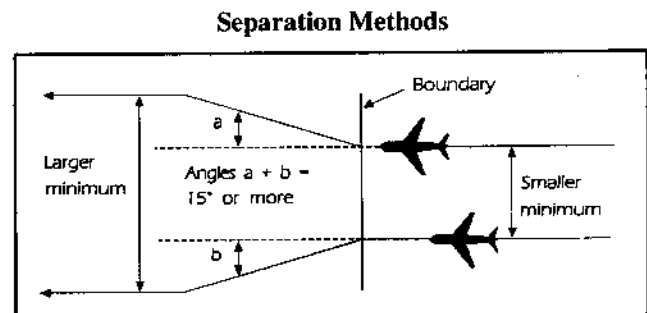


FIG 8-4-3

b. Intersecting flight paths with constant and same width protected airspace when either aircraft is at or beyond a distance equal to the applicable lateral separation minimum measured perpendicular to the flight path of the other aircraft. (See FIG 8-4-4.)

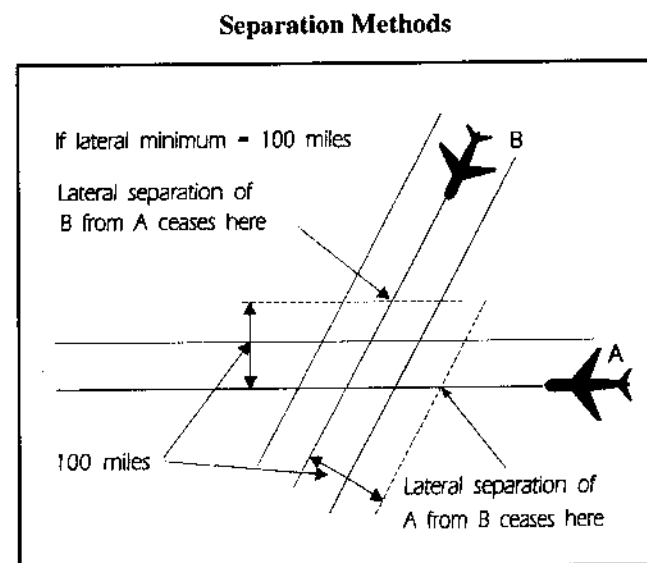


FIG 8-4-4

c. Intersecting flight paths with constant but different width protected airspace when either aircraft is at or beyond a distance equal to the sum of the protected airspace of both flight paths measured perpendicular to the flight path of the other aircraft. (See FIG 8-4-5.)

d. Intersecting flight paths with variable width protected airspace when either aircraft is at or beyond a distance equal to the sum of the protected airspace of both flight paths measured perpendicular to the flight path of the other aircraft. Measure protected airspace for each aircraft perpendicular to its flight path at the first point or the last point, as applicable, of protected airspace overlap.

Separation Methods

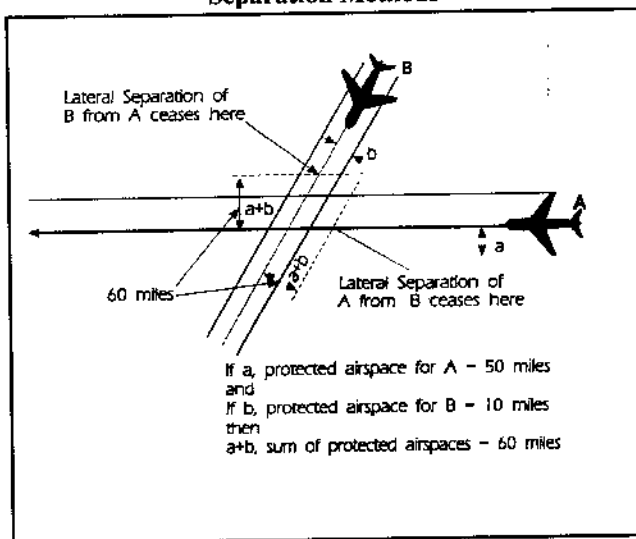


FIG 8-4-5

NOTE-

In FIG 8-4-5, the protected airspace for westbound flight A is distance "a" (50 miles), and for southwestbound flight B, distance "b" (10 miles). Therefore, the sum of distances "a" and "b"; i.e., the protected airspace of Aircrafts A and B, establishes the lateral separation minimum (60 miles) applicable for either flight relevant to the other.

Separation Methods

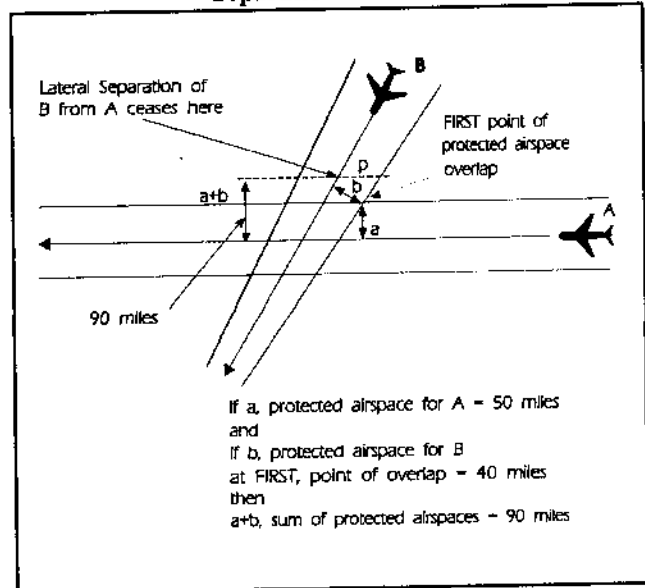


FIG 8-4-6

NOTE-

(See FIG 8-4-6.) At the first point of protected airspace overlap, the protected airspace for westbound flight A is distance "a" (50 miles), and for southbound flight B, distance "b" (40 miles). The sum of distances "a" and "b" (90 miles) establishes the lateral separation minimum applicable in this example for either flight as it approaches the intersection. For example, Aircraft B should be vertically separated from Aircraft A by the time it reaches point "p."

Separation Methods

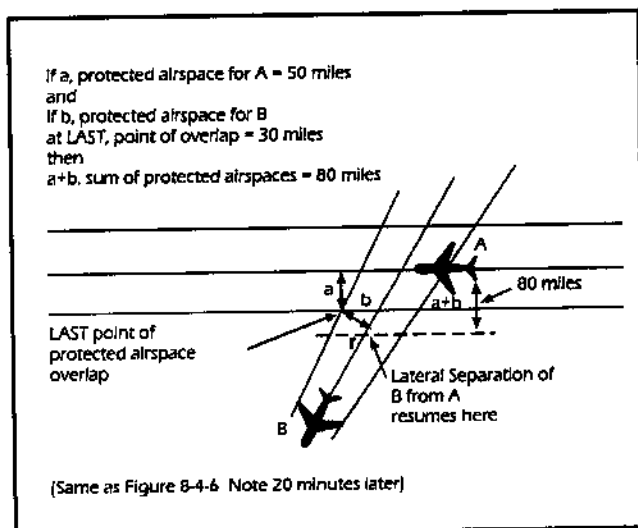


FIG 8-4-7

NOTE-

(See FIG 8-4-7.) Distance "a" (50 miles) and "b" (30 miles) are determined at the last point of protected airspace overlap. The sum of the distances "a" and "b" (80 miles) establishes the lateral separation minima applicable for either flight after it passes beyond the intersection. For example, Aircraft B could be cleared to, or through, Aircraft A's altitude after passing point "r."

8-4-3. REDUCTION OF ROUTE PROTECTED AIRSPACE

When routes have been satisfactorily flight checked and notice has been given to users, reduction in route protected airspace may be made as follows:

- Below FL 240, reduce the width of the protected airspace to 5 miles on each side of the route centerline to a distance of 57.14 miles from the NAVAID, then increasing in width on a 5° angle from the route centerline, measured at the NAVAID, to the maximum width allowable within the lateral minima; for example, 50 miles of protected airspace on each side of centerline; i.e., a lateral minimum of 100 miles. (See FIG 8-4-8.)

Reduction of Route Protected Airspace

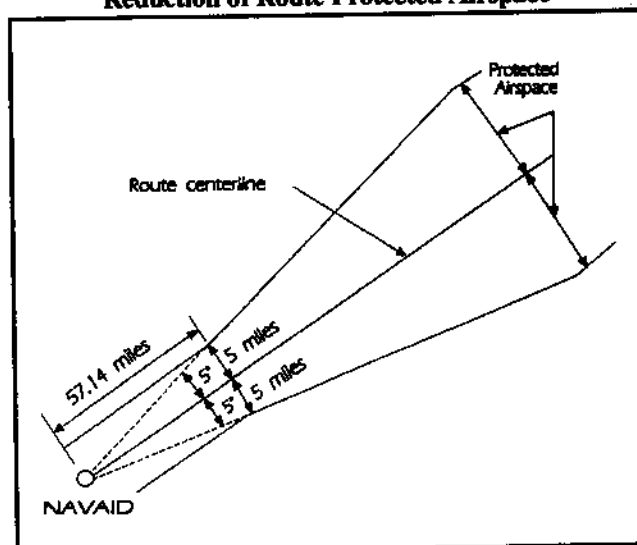


FIG 8-4-8

- At and above FL 240, reduce the width of the protected airspace to 10 miles on each side of the route centerline to a distance of 114.29 miles from the NAVAID, then increasing in width on a 5° angle from the route centerline, as measured at the NAVAID, to the maximum width allowable within the lateral minima; for example, 60 miles of protected airspace on each side of the centerline; i.e., a lateral separation minimum of 120 miles. (See FIG 8-4-9.)

Reduction of Route Protected Airspace

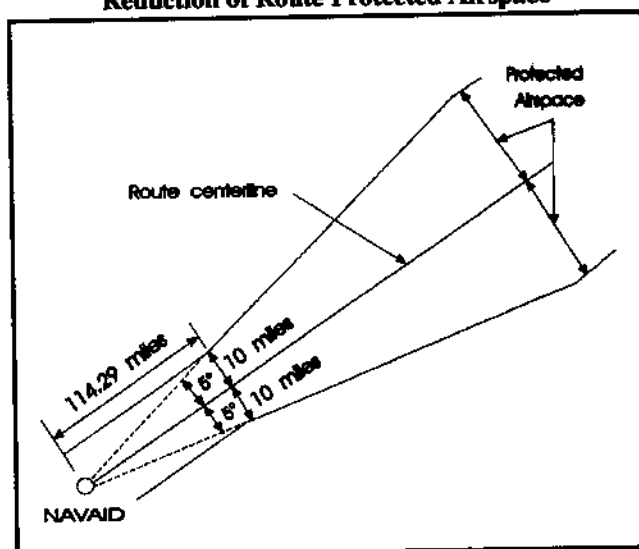


FIG 8-4-9

8-4-4. TRACK SEPARATION

Apply track separation between aircraft by requiring aircraft to fly specified tracks or radials and with specified spacings as follows:

a. Same NAVAID:

1. VOR/VORTAC/TACAN. Consider separation to exist between aircraft established on radials of the same NAVAID that diverge by at least 15 degrees when either aircraft is clear of the airspace to be protected for the other aircraft. Use TBL 8-4-1 to determine the flight distance required for various divergence angles and altitudes to clear the airspace to be protected. (See FIG 8-4-10.)

**Divergence-Distance Minima
VOR/VORTAC/TACAN**

Divergence (degrees)	Distance (mile)	
	FL 230 and below	FL 240 through FL 450
15-25	17	18
26-35	11	13
36-90	8	11

Note: This table compensates for DME slant range error.

TBL 8-4-1

**Track Separation
VOR**

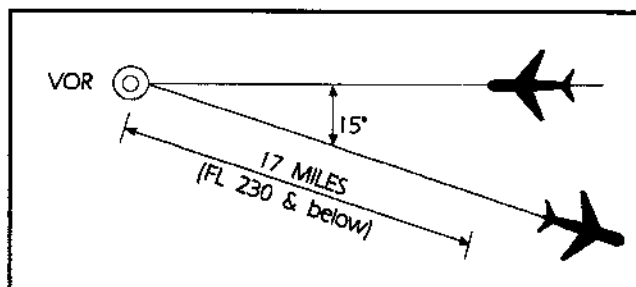


FIG 8-4-10

2. NDB:

(a) Consider separation to exist between aircraft established on tracks of the same NAVAID that diverge by at least 30 degrees and one aircraft is at least 15 miles from the NAVAID. This separation shall not be used when one or both aircraft are inbound to the aid unless the distance of the aircraft from the facility can be readily determined by reference to the NAVAID. Use TBL 8-4-2 to determine the flight distance required for various divergence angles to clear the airspace to be protected. For divergence that falls between two values, use the lesser value to obtain the distance. (See FIG 8-4-11.)

Divergence-Distance Minima (NDB)

Divergence (degrees)	Distance (mile)	
	FL 230 and below	FL 240 through FL 450
30	16	17
45	13	14
60	9	10
75	7	8
90	6	7

Note: This table compensates for DME slant range error.

TBL 8-4-2

**Track Separation
NDB**

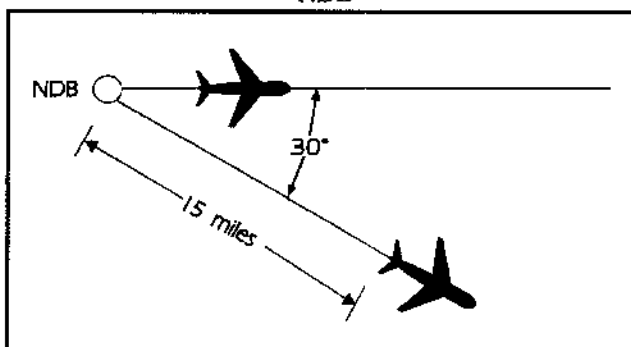


FIG 8-4-11

(b) Clear aircraft navigating on NDB facilities in accordance with para 2-5-2, NAVAID Terms.

b. Different NAVAID's: Separate aircraft using different navigation aids by assigning tracks so that their protected airspace does not overlap. (See FIG 8-4-12.)

**Track Separation
Different NAVAID's**

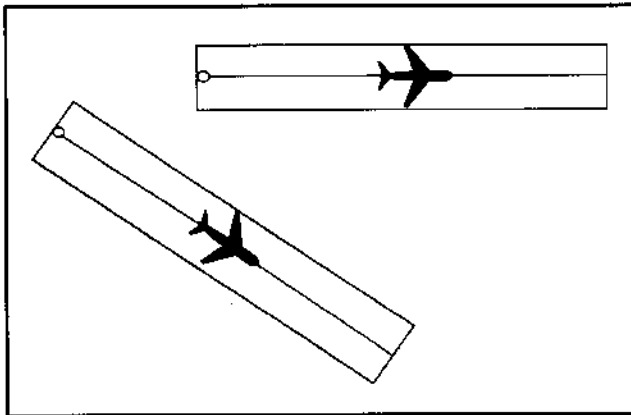


FIG 8-4-12

c. Dead Reckoning (DR):

1. Consider separation to exist between aircraft established on tracks that diverge by at least 45 degrees when one aircraft is at least 15 miles from the point of intersection of the tracks. This point may be determined either visually or by reference to a navigation aid. (See FIG 8-4-13.)

**Track Separation
Dead Reckoning**

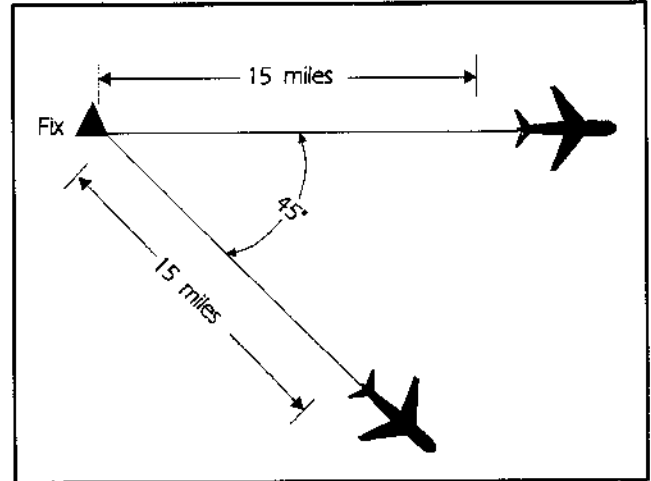


FIG 8-4-13